

Population Dynamics Practice Problems

1. p. 14, bottom slide:

A. Which lines represent the prey and predator, respectively, and how do you know?

B. Calculate the lag time between predator & prey

2. Explain why density dependent factors increase in their effects as population density increases.

3. Why would plant populations tend to be more randomly dispersed than animal populations?

4. p. 22, top slide. Justify the trends of the diagram by using the following ecosystems and some factors that are most limiting there.

A. Tropical rain forest with a dense canopy (top layer of trees)

B. Desert

5. Kingfish, Louisiana, had a population of 1,100 people. They had a birth rate of 12/100, a death rate of 8/100, and an emigration (individuals leaving the population) rate of 2/100. What was the per capita rate of increase, including emigration, for this year in Kingfish?

6. Using the data in question 5 above, how many people were added to Kingfish's population in one year?

7. p. 25, bottom slide. Continue this table to include data for $N = 200, 500, 1000$. Calculate all the data shown in the chart. Draw a conclusion about when the Population Growth Rate is optimal, as a function of population size. How does this pattern differ from Exponential growth?

8. p. 26-27. Explain the 2 life history patterns and the logic behind them according to natural selection.